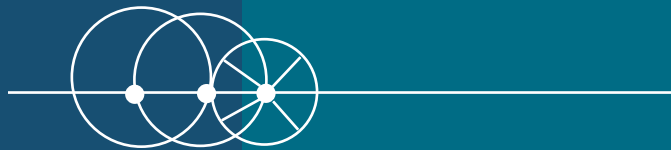


Pollution Prevention Steering into the Future



John Engler, Governor ♦ Russell J. Harding, Director
P2 Annual Report for the
Environmental Assistance Division of the Michigan Department of Environmental Quality 2001





Introduction

The Michigan Department of Environmental Quality (DEQ) has the responsibility of encouraging pollution prevention practices under Parts 143 and 145 of Public Act 451, the Natural Resources and Environmental Protection Act (NREPA). The legislation requires that DEQ publish and submit an annual report to the legislature and governor detailing the efforts undertaken during the previous fiscal year.

This report summarizes the DEQ's major pollution prevention activities in fiscal year 2001 (October 1, 2000 through September 30, 2001). It includes a summary of individual program accomplishments, and an appendix with a shortened version of our *Pollution Prevention Projects and Assistance Programs Fact Sheet*. New this year is a section with case studies to illustrate the types of pollution prevention improvements undertaken by Michigan facilities. More detailed information is available on many of these programs through published reports and on the Environmental Assistance Division (EAD) website (www.deq.state.mi.us/ead).

The EAD welcomes comments on the report and encourages feedback on the performance of its programs. A customer survey is available at www.deq.state.mi.us/ead/asp/forms/p2rptsurvey.html.

www.deq.state.mi.us/ead/pub/p2/2001p2rept.pdf

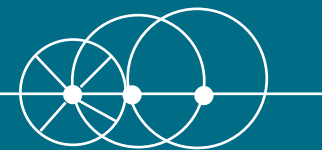
Authority: PA 451 of 1994
Total Cost: \$5143.90
Michigan Department of Environmental Quality

Total Copies: 1200
Cost Per Copy: \$4.286

The Michigan Department of Environmental Quality (MDEQ) will not discriminate against any individual or group on the basis of race, sex, religion, age, national origin, color, marital status, disability, or political beliefs. Questions or concerns should be directed to the Office of Personnel Services, PO Box 30473, Lansing, MI, 48909.



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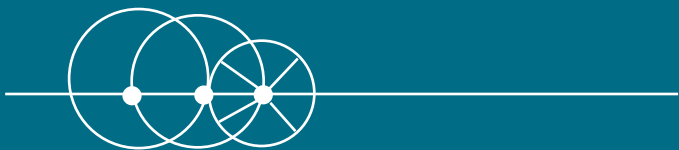
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P2 Steering

Empowering Pollution Prevention at Facilities and in Communities

A Message from the Director:

Pollution prevention, which means eliminating waste at the source, and recycling where this is not possible, is universally recognized as the preferred approach to reducing pollutants. Michigan is fortunate to have a legislature and governor that understand that a robust environmental protection program must include pollution prevention as a cornerstone. This is ever more critical in today's extremely competitive global economy, where reducing waste and increasing efficiency is imperative to survival.

The Department of Environmental Quality (DEQ) offers over 20 outreach and assistance programs to accomplish its legislative mandate to facilitate pollution prevention. There are three major barriers to pollution prevention: 1) lack of information; 2) resistance to change; and 3) financial resources.

To overcome these barriers the DEQ has focused on programs that provide information and resources to businesses, institutions, and local government to empower them to reduce pollution. We maintain 11 partnerships with a wide range of industry sectors, involving more than 440 businesses. New business sectors have been engaged to address their potential to harness pollution prevention, including chemical manufacturers, and a less traditional focus, marinas. One of our long-standing programs, the Michigan Business Pollution Prevention Partnership, is emphasizing business-to-business assistance, and sponsored a workshop to create a forum to establish these relationships.

Our workshops continue to attract strong attendance and receive high evaluation ratings. Over 700 people attended one of our pollution prevention workshops. Our Environmental Assistance Center, which offers toll free telephone assistance, handled over 37,000 information requests in fiscal year 2001.

This year, to build on our outreach efforts, we introduced technology demonstration and pilot trials on energy efficiency, water conservation, and chemical substitution. We provided matching grants to five Michigan companies that agreed to evaluate pollution prevention equipment and share performance information with peers through case studies and live demonstrations at their facilities. It is my firm belief that this is an effective approach to facilitate the adoption of pollution prevention.

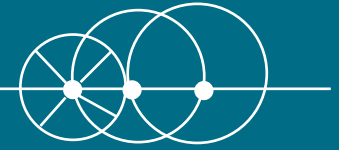
Clean Michigan Initiative (CMI) bond funds support the expanded Retired Engineer Technical Assistance Program (RETAP), which conducted 91 assessments with waste reduction recommendations that could significantly reduce waste and save businesses an average of \$147,000 annually. CMI funds also are used for our Small Business Pollution Prevention Program, which is finishing its second year of operation. Thirteen projects have received loan assistance and as a result, will achieve important reductions in the use of chemicals and water, and the generation of solid waste.

Communities are pivotal to implementation of pollution prevention at the local level. The DEQ used \$1,000,000 in CMI bond funds to award grants to local government and nonprofit organizations to demonstrate innovative approaches to pollution prevention. An additional \$1,000,000 of CMI funds was awarded to local governments to increase access of Michigan residents to household hazardous waste collection programs near their homes. The department has continued its valuable partnership with the local public health and environmental departments, recognizing that they are important change agents in the adoption of pollution prevention at the local level.

I am pleased to report the progress of our pollution prevention programs. In addition to this report, I encourage you to access our web site at www.state.mi.us/ead/p2sect/. It has been redesigned to be more user friendly, and includes program descriptions, documents, database search capabilities, and hyperlinks to other useful information sources.

Russell J. Harding, Director

into the Future



P2 PROGRAMS

Agriculture Pollution Prevention Program

Under the auspices of the Pollution Prevention Strategy for Michigan Agriculture, outreach activities were undertaken to promote environmental stewardship and sustainability in agriculture. More than 800 livestock participants attended the first phase training of the Michigan Agriculture Environmental Assurance Program. Attendees learned to prepare and apply Comprehensive Nutrient Management Plans that will result in an overall nonpoint source pollution prevention strategy for their farm operations. In addition, 26 farms are participating in the pilot Livestock Systems Program, with an assessment of their success expected in fiscal year 2002.

Clean Corporate Citizen Program

Fifteen new members joined the growing number of companies demonstrating strong performance in the areas of environmental compliance, Environmental Management Systems (EMS), and pollution prevention. Forty-one facilities currently carry the Clean Corporate Citizen designation representing a wide spectrum of operations including automobile manufacturing, metal finishing, power generation and transmission, pulp and paper, printing, and recycling. Implementing pollution prevention has led to significant reductions in waste generation and energy consumption for participating members.

"Our commitment to the environment has long been documented in our corporate mission and vision statements. We are committed to the integrity of the environment not because it's fashionable, but because it is the right thing to do. We are honored that the State of Michigan recognizes our efforts by awarding us with the C3."

**Bill Demmer,
President
Demmer Corporation**





P2 Steering

Department of Defense-State of Michigan Pollution Prevention Alliance

The alliance had two notable accomplishments this year. The first involved the establishment of a "Pollution Prevention Recognition Awards" program for outstanding pollution prevention achievements by Michigan-based Department of Defense teams. The second major accomplishment has been the planning of the first workshop tailored specifically for federal and state Department of Defense staff. The workshop will consist of a variety of waste minimization topics, as well as regulatory interface issues that affect defense installations statewide.

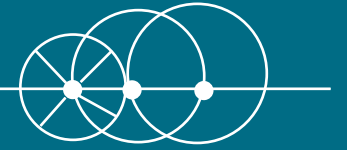
Environmentally Preferred Purchasing

As one of the Environmental Assistance Division's newest educational initiatives, this program, to date, features five bulletins intended to assist purchasers in choosing more environmentally friendly products. Bulletins on refined oil, industrial cleaners, architectural coatings, carpeting, and Energy Star™ options are now available. The Michigan Departments of Management and Budget and Environmental Quality have created a statewide purchasing partnership to increase the use of environmentally preferred products in state government. Various recycled products, including paper products, office supplies, plastic lumber, trash can liners, steel posts, survey stakes, and fence fabric, as well as environmentally preferred products such as low mercury fluorescent lamps, energy saving lighting equipment, and energy saving computers have been utilized as a result of this purchasing partnership.



Senior Airman Hauff has reduced solvent use in the vehicle maintenance shop by installing a bioremediating parts washer.

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Marina Pollution Prevention Initiative

There are over 1,500 marinas located on Michigan's Great Lakes and inland lake shores. The Environmental Assistance Division has initiated an outreach program directed at marinas, marine-related businesses, and marina trade associations. The program provides a forum for sharing pollution prevention technologies and encourages these businesses to take advantage of the environmental, technical, and financial assistance programs offered by the division. Pollution prevention areas being addressed include the proper management of hazardous wastes, plastics, trash, oil, gas, sewage discharges, boat maintenance and repair, gray water handling, and purchase of environmentally preferred marine products.

Mercury Pollution Prevention Initiative

A new state law, passed at the first of the year, requires Michigan schools to phase out mercury use in classrooms and health offices. This law applies to liquid (free flowing) elemental mercury as well as mercury-containing instruments. The Environmental Assistance Division created the *Mercury Elimination Guidelines for Schools* in order to facilitate the safe consolidation, handling, transport, and recovery of mercury. This guideline was distributed to all 6,000 K-12 schools in Michigan during Earth Day 2001. In addition, a federal grant was obtained this year to expand the "Catch the Fever" Michigan Mercury Thermometer Exchange Program statewide. Through this program, 25,000 digital thermometers have been exchanged with the public and 2,300 pounds of mercury and mercury-containing devices have been removed as a human health concern and diverted from potential improper disposal.

WHAT IS MERCURY?

Mercury is naturally occurring in the environment. The silvery-colored liquid is a member of a group of elements called heavy metals and is used in thousands of household and commercial processes. Mercury can be converted in the environment by microorganisms into the organic form, methylmercury, which is especially toxic. While emissions of mercury can occur from both natural and man-made sources, man-made sources are estimated to account for the majority of all emissions. Mercury can cause central nervous system, kidney, and liver damage in humans, and impaired child development.



P2 Steering



Demonstration wetlands at GM Powertrain Saginaw Metal Casting Operations are used to educate the public on the importance of wetlands to our environment.

Michigan Auto Project

Reportable releases at auto manufacturing facilities have decreased by 70 percent on a per vehicle basis since the Auto Project was founded in 1991. Over 100 case studies on pollution prevention technology implementation, at both facility and supplier levels, are now available on the Environmental Assistance Division's website. Through the Michigan Auto Project, automotive companies and the Environmental Assistance Division have begun to focus pollution prevention outreach efforts on supplier needs and mentoring services.

Michigan Business Pollution Prevention Partnership

Business-to-business information exchange has been a major focus of the Michigan Business Pollution Prevention Partnership this year. Members have shared ideas on pollution prevention-oriented environmental management, sustainability, recycling, and resource management. Partnership communication on pollution prevention technologies was enhanced through an e-mail distribution list and at the first partner workshop. The program website expanded to include a searchable partners list, an interactive map display, and electronic registration and annual reporting forms. Members are actively involved in source reduction efforts. Over half the members achieved complete elimination of toxic and/or volatile compounds such as methylene chloride and benzene from their process streams.

Michigan Great Printers Project

Membership renewals, buyer participation, and information exchange were the main focus of the Michigan Great Printers Project this year. Program members are committed to implementing three pollution prevention goals biennially with 26 percent of the renewing members choosing the most preferred method of reducing

into the Future



waste—source reduction. Great Print Buyers continue to be an important aspect of the program with an increased commitment from universities and local governments being sought. Information exchange was conducted with the members through one-on-one telephone contacts, e-mail distribution lists, and the program website.

Michigan Household Hazardous Waste Collection Initiative

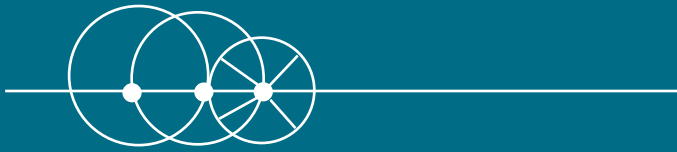
Eleven communities were awarded a total of \$1,000,000 for household hazardous waste community projects ranging from building permanent collection centers to partnerships with neighboring counties to host mobile collections. As a consequence of these grants many Michigan residents now have access to household hazardous waste collection programs near their homes. These programs successfully collected, managed, and disposed of household hazardous wastes such as oil-based paints, solvents, pesticides, cleaners, fluorescent lights, and other mercury-containing devices. A map depicting the award recipients is provided on page 11.

Michigan Pulp and Paper Pollution Prevention Program

Member mills continue to implement and promote pollution prevention activities that seek environmental improvement in concert with continued economic growth and security. Partners were committed to eliminating electrical transformers containing polychlorinated biphenyls; reducing sewer losses, air emissions, water usage, and wastewater discharges; and minimizing landfilling of solid wastes by finding practical uses. This year an Affiliate Member level was announced to provide suppliers of professional services who work closely with the member mills, an opportunity to support the partnership's goals. Recycling, source reduction, and material reuse will comprise the major pollution prevention and reduction focus areas for these new nonmill members.

*The
city of
Cadillac
received
a Michigan
Household
Hazardous
Waste Col-
lection Initiative
Grant.*





P2 Steering

Michigan Turfgrass Environmental Stewardship Program

The program received the 2001 President's Environmental Leadership Award from the Golf Course Superintendent's Association of America; an organization with over 21,000 members representing a total of 65 countries. With nearly 200 golf courses participating, Michigan's Turfgrass Stewardship Program has been able to provide golf courses a clear understanding of environmental laws and regulations related to fuel storage, equipment washing, shop practices, wellhead protection as well as pesticide and fertilizer handling, storage, and application. In addition, 30 member courses have gone beyond what is required by law and have become certified in the program.

Pollution Prevention Student Internship Pilot Program

Three students were awarded internships through the Pollution Prevention Student Internship Pilot Program, a Department of Environmental Quality partnership with Michigan engineering schools and the business sector. This program provides small companies with the opportunity to pilot a pollution prevention technology using interns to facilitate its installation and evaluate and document performance. Students gained valuable pollution prevention experience while working on these projects. Experience ranged from water conservation to developing tools that communicate pollution prevention information on plant operations, thereby furthering public awareness of company efforts to reduce waste.

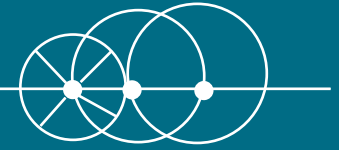
Pollution Prevention Technology Demonstration Program

One of the most effective approaches to facilitating the adoption of pollution prevention technologies is through on-site technology demonstrations at facilities that are highly regarded by industry peers. The Environmental Assistance Division utilized



*The benefits of well-head protection are highlighted during a tour for the **Turfgrass Stewardship Program**.*

into the Future



funds received from the United States Environmental Protection Agency and an Oil Overcharge Fund to offer five matching grants to businesses willing to conduct pollution prevention technology demonstrations. Participants showcase their facilities and share results from the evaluation, including effects on production, advantages and disadvantages of the project, as well as a cost analysis.

Recycling

Staff has been actively working with Michigan businesses and the recycling community to improve the state's recycling infrastructure including maintaining and creating new markets for recyclable materials. Forty-eight companies offering recycling services were added to or modified in the department's popular Internet version of the *Michigan Recycled Materials Market Directory*. In addition, staff is working with the Michigan legislature and recycling community to address the growing problem of consumer electronics waste. The focus is on the hazardous components in cathode ray tubes and central processing units which contain lead, mercury, cadmium, and other potentially hazardous materials.

Retired Engineer Technical Assistance Program

The program conducted 91 on-site assessments this fiscal year, up 25 percent from last year and more than any year since the program began as a pilot in 1994. A new, three-year contract was awarded to a Michigan-based not-for-profit foundation, the Retired Engineer Technical Assistance Foundation, to provide on-site technical assistance for the program. Requests for service have increased in response to the contractor's expanded and targeted marketing of the services; over 120 requests for assessments were accepted resulting in waste reduction recommendations with average annual savings of \$147,000.

Retired engineers share pollution prevention recommendations from an on-site assessment with other assessors at a training event.





P2 Steering

Shooting Range Stewardship Program

This program encourages the development of range stewardship plans and the adoption and implementation of best management practices and pollution prevention measures. An initial focus of the program has been on shooting range design and management issues relating to the prevention of environmental contamination from lead.

Small Business Chemical Manufacturer's Pollution Prevention Initiative

This pollution prevention initiative is an extension of the department's technology demonstration program. This initiative is a concentrated effort with the state's chemical manufacturing industry to facilitate the adoption of pollution prevention practices and technologies through joint demonstration projects. There are currently 15 chemical companies participating in the initiative along with the Michigan Chemistry Council, the American Institute of Chemical Engineers, state and federal agencies, and several Michigan universities. With the demonstration projects, the initiative is looking at increasing dialog with the industry to better understand their technical assistance needs and develop strategies to accelerate the adoption of source reduction technologies.

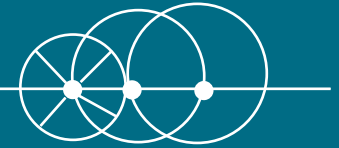
Small Business Pollution Prevention Loan Program

Eighteen loan applications were reviewed with a total of 13 pollution prevention projects being approved. Eleven of the approved projects have been completed to date. Approximately \$1,000,000 in loans, \$500,000 from the loan program and \$500,000 from the lending institution match, have been distributed to small businesses including agricultural producers, dry cleaners, orthodontists, auto shops, metal finishers, and plastic extruders. These loans have contributed to an annual decrease in perchloroethylene purchases by 27 tons, cut water usage by 21 million gallons, reduced solid waste by over 42 tons, and improved worker health and safety.



**Access
Business
Group**
with clean-
in-place
technology,
significantly
reduces water and
chemical usage
cleaning times.

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P2 FIELD OPERATIONS

District Office Services

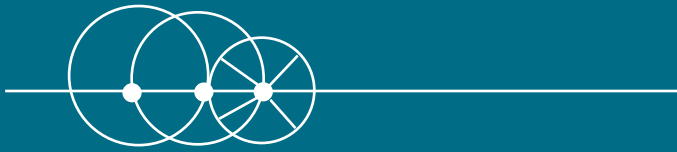
The Environmental Assistance Division expanded its field operations program and has full-time staff located at eight of the nine Department of Environmental Quality district offices. The deployment of Environmental Assistance Division field staff furthers the department's goal of building pollution prevention capacity to meet local needs. Field staff worked with public health agencies, Department of Environmental Quality regulatory staff, local government, educational institutions, trade associations, businesses, and industry to increase the adoption of pollution prevention. They served as a resource to watershed groups, lakewide management groups and local sustainable business forums. Field staff also provided assistance on specific initiatives such as a partnership with Kalamazoo County Public Health Department to promote new infrared thermal de-icing technology at the local airport. In Southeast Michigan, field staff participated in an initiative with the Southeast Michigan Department of Agriculture to further pollution prevention at pesticide manufacturing facilities, nurseries, and pest control operators.

Local Health Department Partnership

The Department of Environmental Quality and representatives from the local public health and environmental departments revised the work plan guiding this partnership to focus on critical activities necessary to strengthen pollution prevention at the local level. The department also issued its first Request for Proposals under the Michigan Community Pollution Prevention Grant program. Initially, \$500,000 is available to promote local pollution prevention initiatives that foster partnerships and sustainability.

*Southeast Michigan field staff speak on the benefits of the **Marina Initiative** in the offices of **Belle Maer Harbor**.*





P2 Steering

Regional Pollution Prevention Grant Program

A total of \$1,000,000 in funding went to 13 grantees through this program to fund regional pollution prevention projects resulting in measurable reductions in the generation of waste. Grants were targeted at regions of the state with environmentally sensitive natural resources, such as the Lake Superior basin and Lake St. Clair. Grants were given for technical assistance to reduce critical pollutants and broad-spectrum insecticides; recovery of mercury, lead, metals, and plastics from computers and electronics; reductions in air, water, and wastewater pollutants by vehicle repair facilities; an education and outreach campaign to promote proper disposal of used motor oil; a used tire recycling project; a fish waste composting project; and to educate shooting range owners on how to reduce the impact of lead shot.

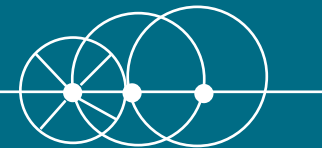
Regulatory Integration

Environmental Assistance Division field staff facilitated the integration of pollution prevention into all Department of Environmental Quality programs by working with department staff and serving as a resource to provide assistance to regulated facilities. Field staff accompanied inspectors to facilities, contributed to proposals for Supplemental Environmental Projects used in enforcement cases, and provided follow-up services to businesses and institutions seeking pollution prevention assistance. To better utilize the department's regulatory staff outreach activities, the Environmental Assistance Division developed the Field Services Referral Form. With the aid of this electronic form, field staff have been better able to target and promote pollution prevention to businesses, industry, and municipalities.



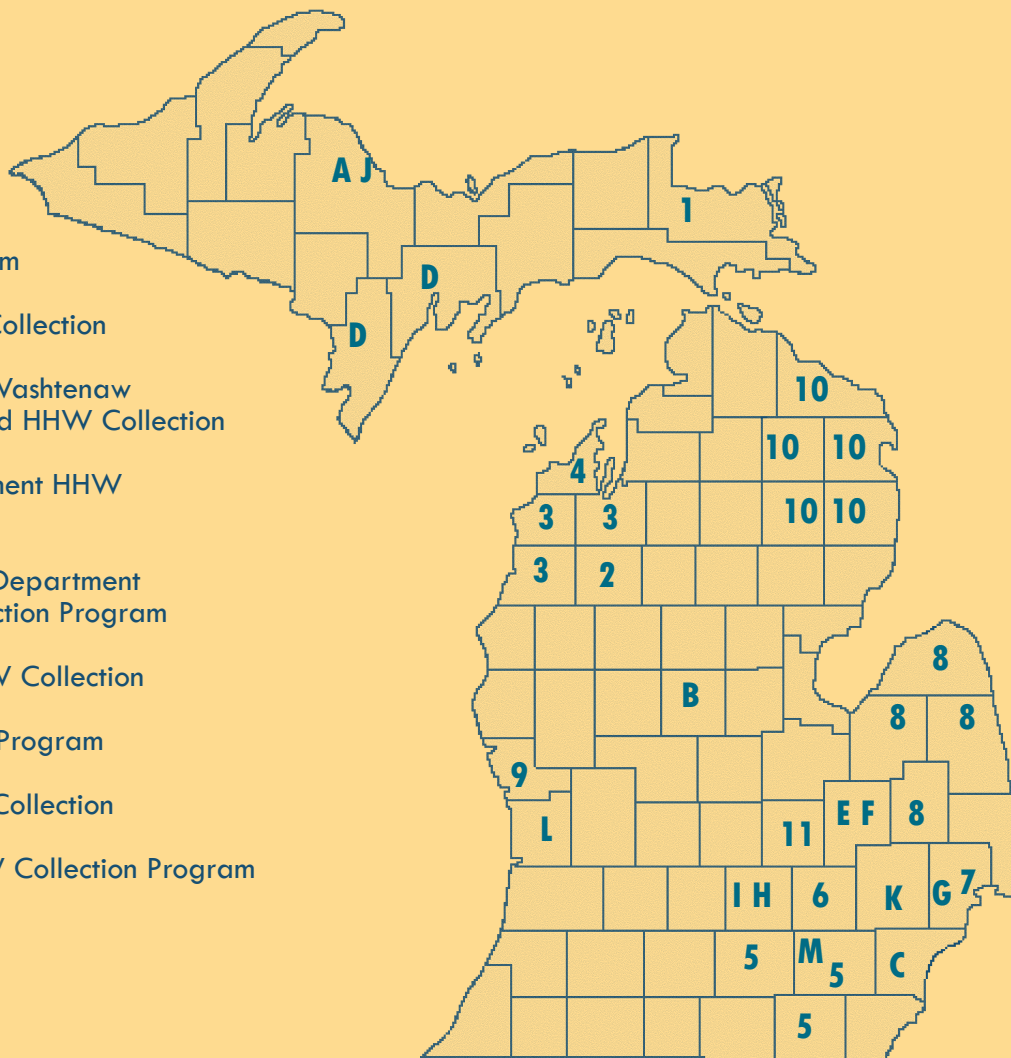
**2001
Pollution
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awards
ceremony
celebrating
regulatory
staff that
have gone
beyond their regu-
lar duties to advocate
pollution prevention.**

into the Future



Household Hazardous Waste Collection Projects

- 1 Chippewa County HHW Facility
- 2 City of Cadillac HHW Collection Program
- 3 Grand Traverse County Mobile HHW Program
- 4 Leelanau County HHW Collection
- 5 Lenawee, Jackson, and Washtenaw Counties Regionalized HHW Collection
- 6 Livingston County Permanent HHW Collection Site
- 7 Macomb County Health Department HHW Satellite Collection Program
- 8 Mobile Four-County HHW Collection
- 9 Muskegon County HHW Program
- 10 Northeast Region HHW Collection
- 11 Shiawassee County HHW Collection Program



Regional Pollution Prevention Grantees

- A** Central Lake Superior Watershed Partnership
- B** Central Michigan District Health Department
- C** City of Detroit
- D** Delta and Menominee Counties
- E** Flint River Watershed Coalition
- F** Genesee County Health Department
- G** Macomb County Public Health
- H** Michigan State University
- I** Michigan United Conservation Clubs
- J** Northern Economic Initiatives Corporation
- K** Oakland County Division of Solid Waste Management
- L** Ottawa County Environmental Health
- M** Washtenaw County Division of Public Works



P2 Steering

P2 PARTNERS

Our partners have made significant reductions in waste. Here are some selected examples of their accomplishments.

Alpha Plastics Significantly Reduces Water Use

Alpha Plastics, Inc. (Alpha), a custom plastic profile extruder, manufactures more than 100 different products in a given year. The operational temperatures of the extruders and calibrators are critical to the manufacturing process, as unacceptable shaping or surface defects can arise in the final products when appropriate temperatures are not met. To control temperature, Alpha's manufacturing operation used a once through water flow system. Annually this system used approximately 22 million gallons of municipal water for cooling and still generated nearly 85,000 pounds of defective product requiring disposal as a solid waste.

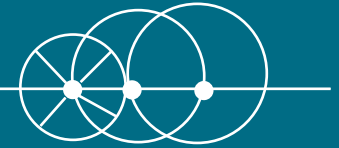
Based on a recommendation from its Retired Engineer Technical Assistance Program assessment and with financial assistance from the Small Business Pollution Prevention Loan Program, Alpha replaced the once through water flow system with a closed loop water recirculation system. Alpha's pollution prevention benefits included:

- An annual reduction in water usage of 20.57 million gallons;
- Cost savings of approximately \$2,000/month in water bills;
- An annual reduction in (defective) plastic product disposal of 84,800 pounds;
- Significant reductions in maintenance and defect recycling costs; and
- Elimination of water discharge to the river.



Alpha Plastics, Inc., is a participating member of the Michigan Business Pollution Prevention Partnership and a Small Business Pollution Prevention Loan Program recipient.

into the Future



Fine-Tuning Means Big Savings for General Motors Detroit Hamtramck Assembly Plant

Pollution from spray painting represents a significant challenge to automotive manufacturers. In painting an automobile, one task involves spraying paint primer on the automobile bodies as they move along a conveyor. The equipment is programmed to spray for a specified interval as the part moves down the conveyor. In an effort to reduce paint waste, the plant contracted a chemical management team to assess many of the plant's nine paint sprayers and their programming intervals.

Before, the spray equipment operated for several counts after the target body moved out of range. This extra paint was collected and became part of the paint sludge submitted for treatment and disposal.

The team fine-tuned the timing of each paint sprayer, reducing the number of counts of spray time from anywhere between 6 and 20 counts. This fine-tuning resulted in a 5.5-ton reduction in volatile organic chemical emissions and eliminated 4 tons of paint sludge—all without a loss of quality. In addition, an estimated \$85,000 was saved and 3,000 gallons of primer were prevented from going to the waste treatment system.

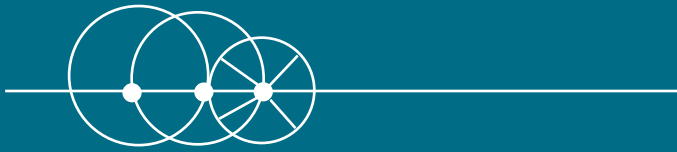


General Motors Corporation,
along with
Ford Motor Company
and
Daimler Chrysler Corporation,
participate in the
Michigan Auto Project.

...

Over 100 case studies pertaining to the Auto Project can be reviewed at www.deq.state.mi.us/ead/asp/autocasestudy.asp.





P2 Steering

Pollution Prevention Means Continuous Improvements for Amazing Graze Acres

Over the past ten years, the Shetler family has progressed toward establishing their 40-head dairy farm, Amazing Graze Acres, as a sustainable farm. Their goal has been to structure farm operations that not only protect the environment but also increase profitability.

The Shetlers began the conversion with a move to intensive rotational grazing. This trend yielded a reduction in labor and machinery costs by \$65 per acre and increased net farm income by \$30 a head. Environmental benefits of this rotational grazing included the elimination of fertilizer, herbicides, and insecticides as well as a reduction in electricity use.

Following the success of rotational grazing, the Shetlers started a manure-composting project. Recycling manure into compost has provided numerous economic and environmental benefits. Composting saves time and labor by nearly 50 percent, as well as reducing odors, nitrogen leaching into groundwater, petroleum use, phosphorous loading into surface water, and manure handling costs.

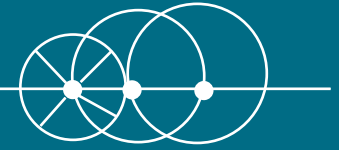
After a decade of preparing their farm for sustainable production, the Shetlers began this year to bottle and sell their own, near-organic milk. At present, the Shetlers sell their product to 33 stores within a 60-mile radius of the farm. Their goal is to be 100 percent organic within the next two years.

A case study was completed for Amazing Graze Acres in cooperation with the Agriculture Pollution Prevention Program.



George Shetler shares the advantages of rotational grazing at a demonstration tour.

into the Future



Siemens Automotive Corporation Promotes Electronics Recycling

Electronics recycling is the latest phase of a comprehensive waste reduction program at Siemens Automotive Corporation (Siemens) that includes paper, wood, plastics, metals, fuels, lubricants, fluorescent lamps, and glass. This expanded recycling program was driven by Siemens' belief in equipment reuse as well as by its desire to ensure proper disposal of nonworking computer components classified as hazardous waste (i.e. monitors, batteries, laser tubes, etc.).

This past summer, Siemens donated approximately two tons of surplus computers and peripheral equipment to the We Are Here Foundation. Equipment that could be reused was then donated by the foundation to local schools with the remaining items being dismantled for usable scrap parts and recyclable materials, including plastics, leaded glass, and precious metals. All hazardous wastes identified were either recycled or properly handled and disposed. Through this recycling program a large portion of each computer's nonhazardous and hazardous components were diverted from reaching area landfills and the receiving schools benefited from utilizing free computer equipment.

The City of Cadillac Establishes a Household Hazardous Waste Program

The city of Cadillac, a recipient of a Michigan Household Hazardous Waste Collection Initiative Grant, held its first household collection event in May. This was the first household collection program offered throughout Wexford County. Over 11,000 pounds of household hazardous waste, including such items as oil-based paints, solvents, pesticides, cleaners, fluorescent lights, and other mercury-containing devices, were collected. These collection items were successfully diverted from Type II landfills and properly managed and disposed of as hazardous waste. Additional collection events are planned for the county in upcoming months.



Siemens Automotive Corporation is a participating member of the Michigan Business Pollution Prevention Partnership.



P2 Steering

Waste Diversion Works for Selfridge Air National Guard Base

As part of its recent base renovation plan, Selfridge Air National Guard Base contracted with DEMEX, Inc. to demolish 22 buildings throughout the base. The contract stipulated a goal of diverting as much demolition debris from the landfill as possible. In addition, the contractor had the task of reporting the diversion rate accomplished.

By placing pollution prevention and reporting requirements in the contract, the government was able to recycle and divert 498 gross tons of steel, 3,400 pounds of nonferrous metal, and 6,400 cubic yards of concrete and brick from being sent to the landfill. In addition, 3,000 gallons of liquid such as heating and transformer oils were recovered for reuse.

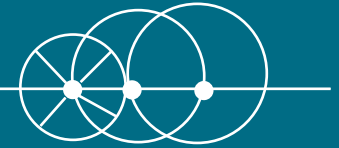
Approximately 74 percent of the demolition debris was recycled, reused, and diverted from disposal in a landfill. This effort was all completed 24 percent below competitive estimates, demonstrating significant cost savings for the government.



**Selfridge Air
National Guard Base**
*is a member
of the United States
Department of Defense-State
of Michigan
Pollution Prevention Alliance.*



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APPENDIX A: Pollution Prevention Projects and Assistance Programs

The Michigan Department of Environmental Quality, Environmental Assistance Division, provides pollution prevention information and technical support to companies, institutions, and communities to reduce pollution, improve the environment, and save money. In addition to the following programs and services listed, the Environmental Assistance Division provides compliance assistance and education and outreach services. For further information on pollution prevention programs and services contact the Environmental Assistance Center at 800-662-9278 or visit our website at www.deq.state.mi.us/ead/p2sect/.

Pollution Prevention Projects and Assistance

Agriculture Pollution Prevention Program (AgP2) - promotes reduction or elimination of environmental contamination sources in agriculture through a partnership between the Michigan Department of Environmental Quality and the Michigan Department of Agriculture. For more information visit the AgP2 website at www.deq.state.mi.us/ead/p2sect/agp2/.

Clean Corporate Citizen Program (C3) - provides public recognition and certain regulatory benefits for companies, municipalities, and institutions that have demonstrated environmental stewardship and a strong environmental ethic.

For more information visit the C3 website at www.deq.state.mi.us/ead/tasect/c3/.

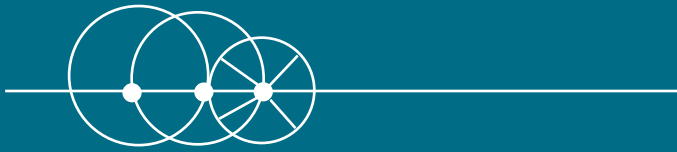
Department of Defense-State of Michigan Pollution Prevention Alliance (DOD P2 Alliance) - facilitates pollution prevention information and technology exchange among representatives from the Department of Defense, National Guard, Army, Air Force reserve bases, armories, special divisions, United States Environmental Protection Agency Region 5 representatives, and Environmental Assistance Division. For more information visit the DOD P2 Alliance website at www.deq.state.mi.us/ead/p2sect/dod/.

Environmentally Preferred Purchasing (EPP) - promotes the purchase of products with less effect on human health and

the environment; taking into account raw materials, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and disposal of the product. For more information visit the EPP website at www.deq.state.mi.us/ead/p2sect/epp/.

Marina Pollution Prevention Initiative - increases awareness and promotes use of marina and boating Best Management Practices to alleviate pollution. For more information visit the marina's website at www.deq.state.mi.us/ead/p2sect/ecoboating/.

Mercury Pollution Prevention Initiative - promotes elimination of nonessential uses of mercury and provides materials on design modifications and product substitution to eliminate the potential



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hazards posed by mercury spills and improper disposal. For more information visit the mercury website at www.deq.state.mi.us/ead/p2sect/mercury/.

Michigan Auto Project (Auto Project) - promotes pollution reductions in vehicle manufacturing through a voluntary pollution prevention and resource conservation partnership among DaimlerChrysler, Ford, General Motors, and the Michigan Department of Environmental Quality. For more information visit the Auto Project website at www.deq.state.mi.us/ead/p2sect/auto/.

Michigan Business Pollution Prevention Partnership (MBP3) - encourages businesses, organizations, and institutions to apply creative, cost-effective techniques to reduce waste and prevent the release of hazardous substances. For more information visit the MBP3 website at www.deq.state.mi.us/ead/p2sect/mbp3/.

Michigan Great Printers Project (MI-GPP) - provides technical assistance, pollution prevention workshops and case

studies to printers who are committed to minimizing impacts on health and the environment. For more information visit the MI-GPP website at www.deq.state.mi.us/ead/p2sect/migpp/.

Michigan Pulp and Paper Pollution Prevention Program (P5) - promotes environmental improvement in concert with economic growth and security in the pulp and paper industry through a partnership between the Michigan Department of Environmental Quality and the Michigan Pulp & Paper Environmental Council. For more information visit the P5 website at www.deq.state.mi.us/ead/p2sect/p5/.

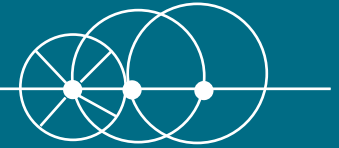
Michigan Turfgrass Environmental Stewardship Program - advances the environmental stewardship of the golf industry and recognizes environmental achievements through a partnership with the turfgrass industry, state agencies, and Michigan State University. For more information visit the turfgrass website at www.deq.state.mi.us/ead/p2sect/turfgrass/.

Shooting Range Stewardship Program - provides information and assistance on best management practices and pollution prevention at shooting ranges through a partnership lead by the Michigan United Conservation Clubs, with assistance from the Michigan Department of Environmental Quality and the Michigan Department of Natural Resources. For more information visit the shooting range website at www.deq.state.mi.us/ead/p2sect/shootingrange/.

Pollution Prevention Field Operations

Field staff are located in Michigan Department of Environmental Quality district offices to offer environmental assistance at the local level. They meet with local governments, businesses, and environmental organizations to provide assistance in the programs offered by the Environmental Assistance Division; field staff work with county public health and environmental departments to promote pollution prevention and environmental incentive programs and services; as well as provide compliance

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assistance and work with district office regulatory program staff to integrate pollution prevention into air, waste, and water programs.

Local Health Department Partnership - enhances and increases the practice of pollution prevention in the health care community through a partnership between the Michigan Department of Environmental Quality and the Michigan Association for Local Public Health. For more information visit the local health department web site at www.deq.state.mi.us/ead/p2sect/lhed/.

Regulatory Integration - promotes pollution prevention to businesses, industry, and municipalities utilizing the outreach potential of regulatory staff through permitting, rulemaking, compliance inspection, and enforcement program areas. For more information visit the regulatory integration website at www.deq.state.mi.us/ead/p2sect/reginteg/.

Pollution Prevention Technical Assistance

The Technical Assistance Program provides assistance to Michigan businesses, institutions, and communities regarding pollution prevention. This includes helping businesses become more efficient in their operations and find alternatives to using hazardous materials. For more information visit the technical assistance website at www.deq.state.mi.us/ead/p2sect/tech/.

Metal Finishing Pollution Prevention Initiative (MFP2I) - improves coordination and strengthens the delivery of pollution prevention services to Michigan's metal finishing industry through assistance, technology demonstration projects, and education outreach. Assistance is provided through a partnership with the Michigan Association of Metal Finishers, the National Center for Manufacturing Sciences, the Michigan Manufacturing Technology Center, and the Michigan Water Association. For more information visit the MFP2I website at www.deq.state.mi.us/ead/p2sect/mfp2i/.

Recycling - promotes source reduction and encourages recycling through the Michigan Materials Exchange Service, the Michigan Recycled Materials Market Directory, and the Recycled Products Directory. For more information visit the recycling assistance website at www.deq.state.mi.us/ead/recycle/.

Small Business Chemical Manufacturer's Pollution Prevention Initiative - enhances and increases pollution prevention practices among small- and medium-size chemical manufacturers through technical assistance, technology demonstration projects, workshops, and distribution of resource information. Assistance is provided through a cooperative project between the Environmental Assistance Division and Michigan's chemical manufacturing industry.

Clean Michigan Initiative Pollution Prevention Activities

The Clean Michigan Initiative (CMI), created under Part 196 of the Natural Resources and Environmental Protection Act (NREPA) in 1998, allocated



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\$20,000,000 to promote pollution prevention activities. A portion of the CMI funds have been dedicated to the Retired Engineer Technical Assistance Program, the Small Business Pollution Prevention Loan Program, and for support of two community grant programs.

Michigan Household Hazardous Waste Collection Initiative (HHWC) - provides helpful information about disposal options and hazardous materials as well as grants to increase the number of collection sites offered throughout the state. For more information visit the HHWC website at www.deq.state.mi.us/ead/cmigrant/.

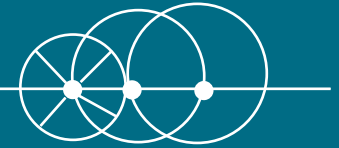
Regional Pollution Prevention Grant Program - provides grants to promote innovative pollution prevention approaches to reduce the generation of waste and critical pollutants in the state. For more information visit the regional grant website at www.deq.state.mi.us/ead/cmigrant/.

Retired Engineer Technical Assistance Program (RETAP) - utilizes experienced, retired, technical professionals to provide on-site assessments that identify opportunities to improve process efficiency and save money. This assistance is non-regulatory, confidential, provided free of charge, and is available to Michigan businesses with less than 500 employees. For more information visit the RETAP website at www.deq.state.mi.us/ead/retap/.

Small Business Pollution Prevention Loan Program - provides low-interest loans for up to \$100,000, to small businesses seeking to reduce environmental waste created or generated at their facility. Loans to implement pollution prevention projects are made through shared financial participation with a business's lending institution. For more information visit the business loan website at www.deq.state.mi.us/ead/p2sect/p2loan/.



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APPENDIX B: List of Partners and Stakeholders as of September 2001

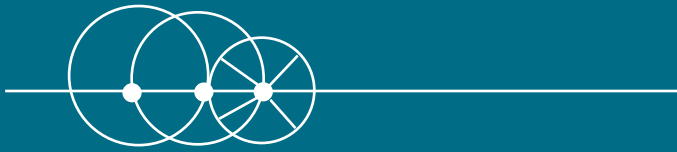
The Michigan Department of Environmental Quality, Environmental Assistance Division, would like to thank all the organizations and individuals who have assisted in the development and implementation of pollution prevention activities and initiatives during the fiscal year. Every attempt was made to include all participants. We apologize if we have inadvertently omitted any name.

Clean Corporate Citizen Program

Baker Furniture, Holland (since May 1998)
Consumers Energy's J.R. Whiting Electric
Generating Plant, Erie (since May 1998)
Consumers Energy's Parnell Road Com-
plex, Jackson (since Dec. 1998)
DaimlerChrysler Sterling Heights Assem-
bly Plant (since Oct. 1997)
Delphi-E. Grand Rapids (since Sep. 1997)
Demmer Corporation Delta Plant, Delta
Township (since Nov. 2000)
Denso Manufacturing Michigan, Inc.
(since Dec. 1998)
Detroit Edison/DTE Energy, Fermi 2
Power Plant, Newport (since Aug. 2000)
DeWitt Barrels, Inc., Grand Rapids
(since Oct. 1999)
DuPont Mt. Clemens Plant, Mt. Clemens
(since Feb. 1999)
Ford Motor Company, Automatic Trans-
mission New Product Center, Livonia
(since Nov. 1999)

Ford Motor Company, Engine Manufac-
turing Development Operations,
Allen Park (since Sep. 2001)
Ford Motor Company, Romeo Engine
Plant, Romeo (since Nov. 1999)
Ford Motor Company, Van Dyke Plant,
Sterling Heights (since Oct. 1997)
General Motors Powertrain, Warren
Transmission Plant, Warren (since
Aug. 2000)
Grayling Generating Station, Grayling
(since Mar. 2001)
Great Lakes Gas Transmission, Deward
Metering Station, Frederic (since
Oct. 2000)
Great Lakes Gas Transmission, St. Clair
Metering Station, St. Clair (since
Oct. 2000)
Great Lakes Gas Transmission, Sault Ste.
Marie Metering Station, Sault Ste.
Marie (since Oct. 2000)
Great Lakes Gas Transmission, Compressor
Station #7, Wakefield (since Oct. 2000)

Great Lakes Gas Transmission, Com-
pressor Station #8, Crystal Falls
(since Oct. 2000)
Great Lakes Gas Transmission, Com-
pressor Station #9, Rapid River
(since Oct. 2000)
Great Lakes Gas Transmission, Com-
pressor Station #10, Naubinway
(since Oct. 2000)
Great Lakes Gas Transmission, Com-
pressor Station #10A, Brevort (since
Oct. 2000)
Great Lakes Gas Transmission, Com-
pressor Station #11, Boyne Falls
(since Oct. 2000)
Great Lakes Gas Transmission, Com-
pressor Station #12, Farwell (since
Oct. 2000)
Great Lakes Gas Transmission, Com-
pressor Station # 13, Otisville (since
Oct. 2000)
Knoll Incorporated, Grand Rapids (since
Jul. 1998)



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Mark IV Automotive, Big Rapids (since Aug. 2000)
March Coatings, Plant 1, Brighton (since Jan. 2000)
March Coatings, Plant 2, Brighton (since Jan. 2000)
MichCon's Alpena Compressor Station, Harrison (since Dec. 1999)
NorthStar Print Group, Norway (since Dec. 1999)
Smurfit-Stone Container, Ontonagon (since Jan. 1998)
TAC Manufacturing, Jackson (since Oct. 1999)
T.E.S. Filer City Station, Filer City (since Dec. 1999)
Unified Industries Inc., Howell (since Sep. 2001)
Visteon Automotive Systems, Chesterfield Trim Plant, Chesterfield (since Mar. 2000)
Visteon Automotive Systems, Sheldon Road Plant, Plymouth (since Jul. 1999)
Visteon Automotive Systems, Utica Plant, Utica (since Dec. 1999)
Wisconsin Electric, Presque Isle Power Plant, Marquette (since Oct. 1998)

Department of Defense-State of Michigan Pollution Prevention Alliance

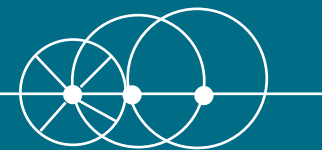
Air Guard Base, Battle Creek
Air Guard Base, Selfridge
Air Guard Combat Readiness Training Center, Alpena
Defense Logistics Information Services, Battle Creek
Defense Reutilization and Marketing Operations, Selfridge
Defense Reutilization and Marketing Services, Battle Creek
Detroit Arsenal
EPA Region 5
Michigan Army National Guard (Department of Military Affairs)
Tank Automotive Research Development and Engineering Center, Detroit
U.S. Army Northern Regional Environmental Center
U.S. Army Reserves

Metal Finishing Pollution Prevention Initiative

Allegan Metal Finishing Co.
Allied Finishing, Inc.
Apollo Plating, Inc.
Benton Harbor-St. Joseph Wastewater Treatment Plant
Curtis Metal Finishing

Decc Co., Inc.
Detroit Water and Sewer Department
Diamond Chrome Plating, Inc.
Electroplating Industries, Inc.
Elm Plating Company
Hi-Tech Coatings, Inc.
Howard Plating Industries, Inc.
K.C. Jones Plating Co.
Lansing Plating Co.
Lansing Water and Sewer Department
Lorin Industries
March Coatings
Marsh Plating Corp.
Masco Corporation
Master Finish Co.
Meridian Automotive Systems
Michigan Automotive Compressors
Michigan Association of Metal Finishers
Michigan Manufactures Association
Michigan United Conservation Club
Midwest Plating Co.
National Center for Manufacturing
National Wildlife Federation
Seyburn, Kahn, Ginn, Bess, Deitch & Serlin, P.C.
Tawas Plating Co.
Valley Chrome Platers
Wayne County Department of Public Services

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Wayne State University
Wyoming Wastewater Treatment Plant
Ypsilanti C.U.A.

Michigan Auto Project

DaimlerChrysler Corporation
Ford Motor Company
General Motors Corporation

Michigan Business Pollution Prevention Partnership

Access Business Group
Advanced Biological Solutions
Alpha Plastics, Inc.
American Electric Power-Nuclear
Generation
ANR Pipeline Company
Applied Environmental
Associated Petroleum Industries of
Michigan
ATOFINA Chemicals, Inc.
AutoAlliance International, Inc.
Baker Furniture
BASF Corporation, Wyandotte Site
Bear Truss Company
Behr Industries Corporation
Belle Maer Harbor
Betz Industries
BLDI Environmental & Safety Management

BP Amoco Company
Brennan Marine Sales
Brownrigg Companies, Ltd.
Cadillac Renewable Energy
Campbell & Company
Capital City Associates
Capitol Group Governmental Consultants
City of Wyoming-Clean Water Plant
C-Mar Products Inc.
Coldwater Board of Public Utilities
Colonial Press, Inc.
Consumers Energy-Adrian Service
Center
Consumers Energy-BC Cobb Plant
Consumers Energy-JH Campbell Complex
Consumers Energy-JC Weadock Plant
Consumers Energy-JR Whiting Plant
Consumers Energy-Parnall Road Office
Complex
Corsair Engineering, Inc.
Crystal Flash
Cyltec LLC
Delphi Automotive Systems
Delta College
Demmer Corporation-Delta Plant
DENSO Manufacturing Michigan, Inc.
Detroit Edison-Fermi 2 Plant
Detroit Edison Company
DeWitt Barrels

Donnelly Corporation
Douglas Cleaners
Dow Corning Midland Plant
DuPont Automotive, Mt. Clemens Site
Eagle Ottawa-Rochester Hills, Ltd.
Eagle Ottawa Leather Company-Grand
Haven
East Jordan Iron Works
Eaton Aeroquip Inc.-Jackson
Eaton Corporation-Rochester Hills
Eaton Corporation-Saginaw
Eaton Corporation PSCO Ann Arbor
Eco Waste Solutions, LLC
Electrical Design and Control
Envirologic Technologies, Inc.
Environmental Health Resources Inc.
ESCO Company Limited Partnership
Ford Motor Company-ATNPC
Ford Motor Company-Livonia Transmission
Foundry Association of Michigan
Four Winns, Inc.
General Motors-Pontiac East Assembly
Plant
General Motors Powertrain-Flint
Components
General Motors Powertrain-Livonia
Engine
General Motors Powertrain-Romulus
Engine Plant



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General Motors Powertrain-Saginaw
Malleable Plant
General Motors Powertrain-Saginaw
Metal Castings
General Motors Powertrain-Warren
Transmission
General Motors Product Center-Validation
General Oil Company, Inc.
Genesee Power Station
Genesys Health System
Georgia-Pacific Corporation-Milan
Gil-Mar Manufacturing Company
Grayling Generating Station
Great Lakes Gas Transmission Company
Harry Major Machine & Tool
Haworth, Inc.
Hazekamp Meats
Hemlock Semiconductor
Herman Miller, Inc.
Huron, Inc.
Inland Waters Pollution Control, Inc.
International Foam and Trim
Irwin Seating Company
Jan's Professional Drycleaners
Knoll Inc.
Magni Industries, Inc.
March Coatings-Plant 2
March Coatings, Inc.
Marine Pollution Control Corporation

Mark IV Automotive
Mayco Plastics, Inc.
McCormick Enterprises, Inc.
Meridian Automotive Systems, Inc.
Michigan Boating Industries Association
Michigan Chemical Council
Michigan Consolidated Gas Company
Michigan Institute of Laundering and
Drycleaning
Michigan Seat Company
Mid-West Instrument
MWP Inc.-Pleuco Technologies Division
Ondeo Nalco, Jackson Plant
Pfizer Global Manufacturing
Pfizer Global Research and Development
Pharmacia & Upjohn Company
Pioneer Foundry Company, Inc.
RMT
Ronningen Research & Development
Company
Sackner Products
Saugatuck Yacht Service
Schefenacker Vision Systems USA, Inc.
Siemens Automotive Corporation
Solutia, Inc.
Sparrow Health System
SQS, Inc.
Steelcase, Inc.
Sunshine Prairie Farm

T.E.S. Filer City Station
TAC Manufacturing, Inc.
Taplin Environmental Contracting
Corporation
Taylor Building Products
Tesco Engineering
The Traverse Group
Tower Marine
TriMedia Consultants
United States Postal Service, Lansing
Branch
Universal Coating, Inc.
Vico Products Company
Visteon Automotive Systems-Sheldon
Road Plant
Wacker Silicones Corporation
Wisconsin Electric Power-Presque Isle
Plant
Yamaha Musical Products

Michigan Great Printers Project

A & E Printers
Access Business Group
Action Printing
Adair Printing
Allegra Print & Imaging (6 locations)
Alpha Graphics
American Ink
Amerikal, Inc.

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Aquila Printing
Arrow Swift
ASAP Printing
Book Concern Printers
BRD Printing, Inc.
Bryant Printing
Business Cards Plus
Business Imaging Group
Champion Printing and Advertising
Clarke American
Classic Printing, Inc.
Colonial Press, Inc.
Copy Options, Inc.
Copy Quick
CPI Graphics
Craft Press Printing
Danielson Color Print
Delta Printing Company, Inc.
Dickinson Press
E&G Printing Service, Inc.
Earle Press Printing
Econo Print, Inc.
Edwards Brothers, Inc.
EPI Printers
Etheridge Company, The
Executive Printing Services
Falcon Printing
Fidlar Doubleday
First Impression Printers

Flashes Publishers, Inc.
Fort Dearborn
Fullserv, Inc.
Gardner Printing
Goetzcraft Printers
Gonzalez Integrated Marketing, Inc.
Grandville Printing
Graphics 3, Inc.
Graphic Enterprises, Inc.
Hatteras Printing
Holland Sentinel, The
Homewood Press, Inc.
Howard Printing
Huron Valley Printing & Imaging
Ideal Printing Company
Image Masters Precision Printing
Impressions Printing Inc.
Inco Graphics
Ingham County Printing Office
International Minute Press, Farmington Hills
International Minute Press, Ann Arbor
International Minute Press, Portage
IPC Communications Services
Jet Speed Printing Company
JB Printing
Jiffy Print, Inc.
Jiffy Prints
Job Shop Ink, Inc., The

John Henry Company, The
Keystone Printing, Inc.
Kimcraft Printers
Kinko's (3 locations)
Lake Superior Press, Inc.
Lansing Printing Company
Lawson Printers, Inc.
Logan Brothers
LTI Printing
Macomb Printing
Malloy Lithography Inc.
Mason Graphics
McGrath-DeFoe Printing
McKay Press
McNaughton & Gunn, Inc.
Michigan Education Data Network Association
MICR Graphics/Billy the Printer
Millbrook Printing
Mitchell Graphics
Myers Print King
Nelson Printing Enterprises
North Star Print Group
Packaging and Shipping Specialists
Paper Image Printing Center
Parkman Printing, Inc.
Petoskey News-Review
Portage Printing
Print Haus, Inc., The



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Print Shop, The
Printery, The
Printwell
Progressive Graphics
Quick Printing Company
Relizon
Riegle Press Inc., The
Riverrun Press
Rogers Printing, Inc.
SBF/Corona Graphics, Inc.
Seeley's Printing Service
Sheridan Books, Inc.
Sir Speedy
Sir Speedy Printing
Spartan Printing
Standard Printing & Office Supply
State of Michigan, Print & Graphic
Services
Sterling Press
Superior Business Solutions
Superior Color Graphics
T.C. Advertising
Target Information Management
TBF Graphics
Thomson-Shore Inc.
Townley Studio
Tweddle Litho Company
University Lithoprinters
Utley Brothers, Inc.

Valassis Comm., Inc.
Webco Press - Mass Media
West Colony Printing
Wood Press Company

Michigan Pulp and Paper Pollution Prevention Program

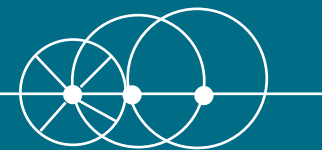
Domtar
Environmental Solutions, Inc. (affiliate
member)
Graphics Packaging, Inc.
International Paper
Louisiana-Pacific Corporation
Mead Westvaco
Menasha Corporation
Menominee Paper Company
Packaging Corporation of America
RMT, Inc. (affiliate member)
Rock-Tenn Company
SAPPI Fine Paper North America
Smurfit-Stone Container Corporation

Michigan Turfgrass Environmental Stewardship Program

(List of golf courses that have completed
a site visit.)
Alpena Golf Club
Apple Mountain
Arcadia Bluffs G.C.

Bay City C.C.
Bedford Valley G.C.
Birmingham C.C.
Black Lake
Boyne Highlands Resort
Canadian Lakes
Cascade Hills C.C.
Chestnut Valley Golf Club
Crystal Downs C.C.
Dearborn Hills G.C.
Egypt Valley C.C.
Elk Ridge G.C.
Forest Akers G.C. - M.S.U.
Forest Lake C.C.
Fox Hills G.C.
Franklin Hills C.C.
Glen Oaks G.C.-Oakland County
Grand Hotel G.C.
Grand Traverse Resort
Grosbeck G.C.
Gull Lake C.C.
Gull Lake View G.C.
Gull Lake View Stonehedge
Huron Meadows Metropark G.C.
Hudson Mills Metropark G.C.
Indian Springs Metropark G.C.
Indianwood C.C.
Kalamazoo C.C.
Kensington Metropark G.C.

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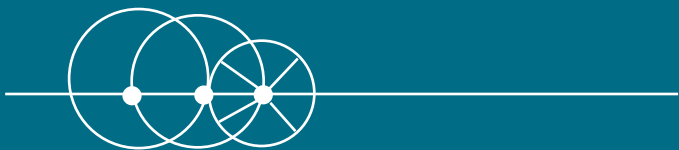
Lake Erie Metropark G.C.
Lakelands Golf and C.C.
Lockmoor Club
Lost Lake Woods
Lower Huron Metropark G.C.
Maple Lane G.C.
Marysville G.C.
Metro Beach Metropark G.C.
Milham Park
Mystic Creek Golf Club
Northbrook G.C.
Oakland Hills C.C.
Paint Creek C.C.
Petoskey Bay View C.C.
Pierce Lake
Railside G. C.
Raisin River Golf Club
Red Run G.C.
Royal Scot
Shanty Creek Resort
Southgate G.C.
Springfield Oaks-Oakland County
Spring Lake C.C.
St. Clair Shores C.C.
St. Ives Golf Club
Sylvan Glen G.C.
The Farm G.C.
The Fortress
The Garland Resort

The Links at Whitmore Lake
The Meadows Golf Club
The Moors
The Pines at Lake Isabella
The Rock at Woodmoor
Timber Ridge
Traverse City C.C.
Walnut Hills C.C.
Warwick Hills C.C.
Whispering Pines G.C.
Whispering Willows G.C.
White Lake Oaks-Oakland County
Willow Metropark G.C.
Wolverine Golf Club
Wuskowhan Players Club
Wyandotte Shores

Small Business Chemical Manufacturer's Pollution Prevention Initiative

Access Business Group
American Institute of Chemical Engineers
(Mid-Michigan section)
Anderson Development Co.
Atofina Chemicals, Inc.
Dow Chemical Co.
Dow Corning Corp.
DuPont Automotive
ESCO Co.
Hercules Inc.

Hemlock Semiconductor Corp.
Michigan Chemistry Council
Michigan Industries of the Future
Oleson Consulting, Inc.
Ondeo-Nalco Chemical Co.
Pfizer Global Manufacturing
Pharmacia & Upjohn, Inc.
RETAP
Solutia, Inc.
Wacker Silicones Corp.
Wayne State University

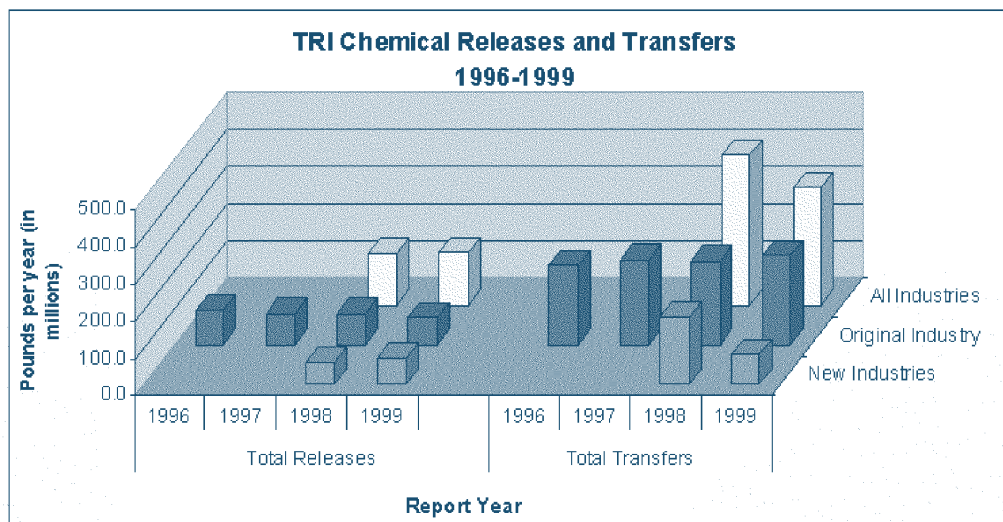


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APPENDIX C: Toxic Release Inventory Chemical Data

The Toxic Release Inventory (TRI) chemical data presented in this report is a statewide total of the toxic release data for 1996 through 1999 and does not indicate upward or downward trends for individual pollutants or facilities. Additional information on individual pollutants and facilities, including historical information, is available on the internet at www.deq.state.mi.us/ead/sara/313.html.

Prior to 1998, the TRI covered 20 manufacturing categories. In 1998, seven nonmanufacturing industrial sectors (new sectors) began reporting their toxic chemical releases. The addition of these new industries resulted in a significant increase in the reported levels of TRI releases to the environment and transfers off-site for further waste management. There was a 12 percent reduction in reported releases from the original industries from 1998 to 1999. These facilities also reported a seven percent increase in off-site



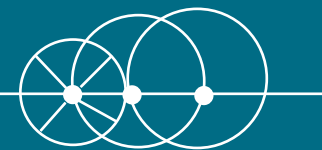
Graph 1
Source: MDEQ SARA Title III RY1999 data (3/2001)

transfers, which includes materials recycling, energy recovery, and treatment. (Graph 1)

Over the past few years, the Department of Environmental Quality has reviewed the TRI waste management data to determine whether the information can be used as an indicator of the progress of pollution prevention in the state. The review has focused on reduc-

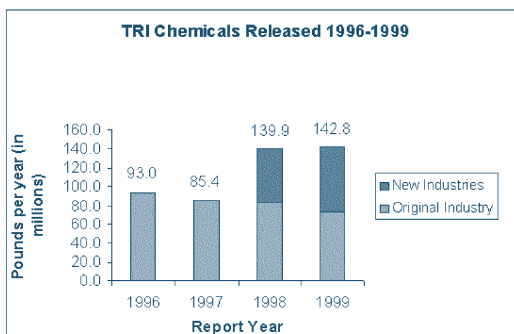
tions in the amounts of TRI chemicals released annually, changes in recycling and energy recovery rates, and fluctuations in production information. Results are difficult to assess due to the difficulty of extracting the impacts of the economy and changes in environmental legislation on TRI.

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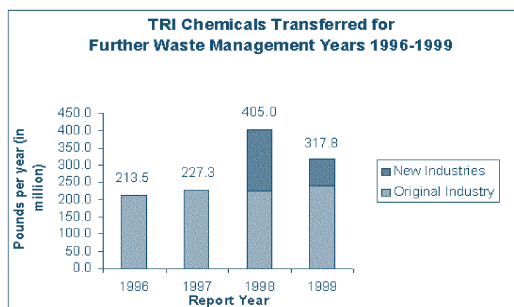
These three graphs depict changes in Michigan's TRI data over time. Graph 2 shows the total quantity of TRI chemicals released to the environment over four years. Graph 3 shows the total quantity of TRI chemicals transferred off-site for further waste management (recycling, energy recovery, and treatment). Graph 4 shows the amounts of waste managed by Michigan facilities through recycling, energy recovery, and treatment activities, both on-site and off-site.

The Department of Environmental Quality is currently assessing TRI data for reporting year 2000. This information will be available from the department in January 2002. For additional information, contact the department SARA Title III Program office.



Graph 2

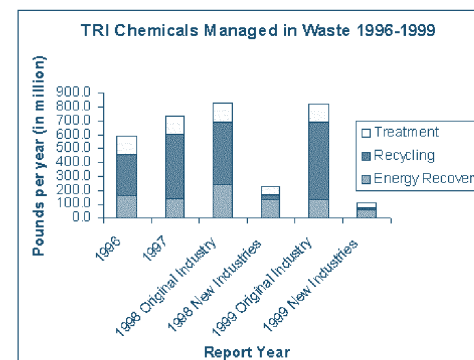
Source: MDEQ SARA Title III RY 1999 data (3/2001)



Graph 3

Source: MDEQ SARA Title III RY 1999 data (3/2001)

Note: Report Year 1998 and 1999 totals break out Original from New Industries



Graph 4

Source: MDEQ SARA Title III RY 1999 data (3/2001)

